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The role of driver sleepiness in car crashes: a systematic review of epidemiological studies

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Abstract

To assess the available evidence for a causal role of driver sleepiness in car crashes or car crash injury, and to quantify the effect, a systematic review of the international literature was conducted. The review included all studies with a fatigue-related exposure measure, a crash or crash injury outcome measure and a comparison group, regardless of publication status, language or date of the study. Eighteen cross-sectional studies and one case-control study fulfilled the inclusion criteria. The fatigue-related exposures investigated in these studies were sleep disorders (n=14), shift work (n=2), sleep deprivation/fragmentation (n=1), and excessive daytime sleepiness (n=2). Only one study used an injury outcome measure. Studies were limited in their ability to establish a causal relationship by their design, by biases, and in many cases, by small sample sizes. The better quality cross-sectional studies were suggestive of a positive relationship between fatigue and crash risk, but could not provide reliable estimates of the strength

of the association. The case-control study provided moderately strong evidence for an association between sleep apnoea and risk of driver injury, with an adjusted odds ratio of 7.2 (95% confidence interval 2.4â€“21.8). We conclude that the direct epidemiological evidence for a causal role of fatigue in car crashes is weak, but suggestive of an effect. To estimate the burden of injury due to fatigue-related crashes in the population, information is required from well-designed observational epidemiological studies about the prevalence of fatigue in the car driving population and the size of the risk this confers.

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Keywords

Fatigue; Sleepiness; Traffic; Car crash; Systematic review

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